

REMARKS

Claims 1-22 and 24-30 are pending. Claim 30 is withdrawn from consideration as being drawn to a non-elected invention. By this Amendment, the specification is amended; claim 23 is canceled without prejudice or disclaimer; and claims 1, 12, 24, 27 and 30 are amended. Reconsideration in view of the above amendments and following remarks is respectfully requested.

It is respectfully submitted that the criteria for a proper restriction between patentably distinct inventions set forth in MPEP § 803 has not been satisfied. In particular, it is respectfully submitted that the search and examination of the entire application can be made without a serious burden. For example, each of claims 1 and 12 (of Group I) recite determining a relationship including curve-fitting either a trim amount data as a function of an amount of an inert gas or an amount of the inert gas as a function of trim amount data. Claim 30 (of Group II) also recites determination of a relationship including curve-fitting either a trim amount data as a function of an amount of an inert gas or an amount of the inert gas as a function of trim amount data.

It is respectfully submitted that regardless of which group Applicants elect, the search and examination of the entire application requires the search and examination of a relationship including curve-fitting either a trim amount data as a function of an amount of an inert gas or an amount of the inert gas as a function of trim amount data. Accordingly, it is respectfully submitted that the search and examination of the subject matter of Group I sufficiently overlaps the search and examination of the subject matter of Group II such that the entire application can be searched and examined without a serious burden.

Reconsideration and withdrawal of the restriction requirement are respectfully requested.

Claims 1-26 and 29 were rejected under 35 U.S.C. § 102(e) over Tomoyasu et al. (U.S. Patent Application Publication 2004/0185583 A1) and claims 27 and 28 were rejected under 35 U.S.C. § 103(a) over Tomoyasu et al. The rejections are respectfully traversed.

The subject matter of claim 23 has been incorporated into claim 12. Claims 1 and 30 have also been amended to include the subject matter of claim 23.

U.S. Patent Application 2004/0185583 A1 to Tomoyasu et al. is assigned on its face to Tokyo Electron Limited. The instant application is assigned to Tokyo Electron Limited by way of an Assignment filed June 24, 2004, and recorded at Reel/Frame 015505/0347.

With respect to the subject matter of claim 23, the Examiner alleges on page 4, lines 11-15, that Tomoyasu et al. disclose in paragraphs [0007] and [0074], “adjusting the amount of inert gas (gas flow rate) in order to remove the desired amount of the chemical oxide.” It is respectfully submitted that Tomoyasu et al. do not disclose or suggest an amount of a first process gas, an amount of a second process gas, and an amount of an inert gas, nor do they disclose or suggest determining a relationship between a trim amount of said feature and an amount of an inert gas, wherein said relationship is established for an amount of a first process gas, and an amount of a second process gas, as recited in each of claims 1 and 12. Moreover, Tomoyasu et al. do not disclose or suggest wherein determining the relationship includes curve-fitting either the trim amount data as a function of the amount of the inert gas or the amount of the inert gas as a function of the trim amount data.

There is no disclosure or suggestion of an amount of inert gas in paragraph [0007] of Tomoyasu et al. In paragraph [0074], Tomoyasu et al. disclose varying modeling techniques, but do not disclose or suggest the use of such techniques with respect to an amount of inert gas as a function of as a function of the trim amount data, or vice versa.

Tomoyasu et al. do not disclose or suggest a process recipe having an amount of a first process gas, an amount of a second process gas, an amount of an inert gas, and a process pressure, as recited in claims 1 and 12.

As disclosed in paragraphs [0200] – [0206], the gas distribution system 1260 of the chemical treatment system 1220 distributes a process gas comprising two gases, for example  $\text{NH}_3$ , HF,  $\text{H}_2$ ,  $\text{O}_2$ , CO,  $\text{CO}_2$ , Ar, He, etc. It is clear that the gas distribution assembly 1422, including the first gas distribution plate 140 and the second gas distribution plate 1432, is not configured to distribute a first process gas, a second process gas, and an inert gas. Nor is there any disclosure or suggestion by Tomoyasu et al. of using inert gas to control the amount of trim that is removed. Therefore, Tomoyasu et al. can not anticipate or render obvious claims 1 and 12.

With respect to claim 29, Tomoyasu et al. do not disclose or suggest wherein increasing the amount of argon corresponds to decreasing the trim amount. Tomoyasu et al. disclose in paragraph [0195] the use of argon as a heat transfer gas supplied to the back-side of the substrate 1242, and its use as a process gas in paragraph [0200]. There is no disclosure or suggest of increasing the amount of argon corresponding to decreasing the trim amount, or of introducing argon with  $\text{NH}_3$ . Accordingly, Tomoyasu et al. cannot anticipate or render obvious claim 29.

Reconsideration and withdrawal of the rejections over Tomoyasu et al. are respectfully requested.

Claims 1, 4-8, 10, 11 and 29 were rejected under 35 U.S.C. § 102(e) over Newton et al. (U.S. Patent Application Publication 2004/0099377 A1) and claims 12, 15-19 and 21-28 were rejected under 35 U.S.C. § 103(a) over Newton et al. The rejections are respectfully traversed.

MPEP § 2143 states: "To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations."

It is further respectfully noted that MPEP § 2143.01 III states: "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." (Underlining emphasis in original.) MPEP § 2143.01 III further states: "Although a prior art device 'may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so.'"

With respect to claim 23, which has been incorporated into claims 1 and 12 as discussed above, it is respectfully submitted that the Examiner's determination that it would have been obvious, after gathering information, to "tabulate/extrapolate/manipulate data and perform calculation using common statistical methods" fails to establish a *prima facie* case of obviousness because there is no suggestion or motivation by Newton et al., or in the knowledge generally available to one of ordinary skill in the art, to perform such information gathering and calculations, and even assuming there was, which Applicants do not concede, such modifications would not have resulted in the inventions recited in claims 1 and 12.

With respect to the alleged absence of unexpected results, it is respectfully noted that Applicants are not required to provide evidence of such until the Examiner has presented a *prima facie* case of obviousness. As the Examiner has not presented a *prima facie* case of obviousness, their alleged absence is irrelevant to the patentability of the pending claims.

The only suggestion of an inert gas by Newton et al. occurs in paragraph [0074], where it is disclosed that the chamber 7 may optionally be provided with Argon or N<sub>2</sub> gas from lines 97 and 99. However, this disclosure occurs in the context of paragraph [0073], where Newton et al. disclose that the thickness of the self-limiting etchable layer 50 is

controlled by controlling the reaction temperature or the stoichiometry of the HF:NH<sub>3</sub> process gases. There is no disclosure or suggestion, however, of determining a relationship between a trim amount of the feature and an amount of an inert gas, wherein said relationship is established for an amount of a first process gas, and an amount of a second process gas.

As Newton et al. do not disclose or suggest all the claim limitations, and as there is no suggestion or motivation by Newton et al., or in the knowledge generally available to one of ordinary skill in the art, to modify the reference, the rejection fails to present a *prima facie* case of obviousness.

Claims 4-8, 10, 11, 15-19, 21, 22, 24-26, 28 and 30 recite additional features of the invention and are allowable for the reasons discussed above with respect to claims 1 and 12, and for the additional features recited therein.

With respect to claim 29, Newton et al. do not disclose or suggest wherein increasing the amount of argon corresponds to decreasing the trim amount, or of introducing argon with NH<sub>3</sub>. Accordingly, Newton et al. cannot anticipate or render obvious claim 29.

Reconsideration and withdrawal of the rejections over Newton et al. are respectfully requested.

Claims 1, 4-12 and 15-29 were rejected under 35 U.S.C. § 103(a) over Natzle et al. (U.S. Patent Application Publication 2004/0097047 A1) in view of Newton et al. and claims 2, 3, 13 and 14 were rejected under 35 U.S.C. § 103(a) over Natzle et al. in view Newton et al. and further in view of Doris et al. (U.S. Patent Application Publication 2004/0241981 A1). The rejections are respectfully traversed.

With respect to claims 1 and 12, which have been amended to incorporate claim 23, it is respectfully submitted that the Examiner's determination that it would have been obvious, after gathering information, to "tabulate/extrapolate/manipulate data and perform calculation using common statistical methods" fails to establish a *prima facie* case of obviousness because there is no suggestion or motivation by Natzle et al. or Newton et al., or in the knowledge generally available to one of ordinary skill in the art, to perform such information gathering and calculations, and even assuming there was, which Applicants do not concede, such a combination would not have included all the limitations of claims 1 and 12 and would not present a *prima facie* case of obviousness.

With respect to the Examiner's determination that Newton et al. are "only relied on to show this feature" (i.e. adding inert gas to the process gas), it is respectfully noted that MPEP 2141.02 VI. States: "A prior art reference must be considered in its entirety, i.e., as a whole,

including portions that would lead away from the claimed invention.” (Underlining emphasis in original.) Accordingly, it is not possible to rely on a Newton et al., or any reference, “only” to show a particular feature. The mandate of 35 U.S.C. § 103(a) is that the subject matter, including the prior art, be considered as a whole, not merely selected portions.

As discussed above, the Examiner’s allegations regarding the lack of unexpected results are irrelevant to the determination of obviousness of the pending claims as the Examiner has not presented a *prima facie* case of obviousness because the combination of Natzle et al., Newton et al., and/or Doris et al. fails to include all the claim limitations, and because there is no suggestion or motivation to combine the references. Applicants are thus not required to submit any evidence of unexpected results.

Claims 2-11, 13-22, 24-26, 28 and 30 recite additional features of the invention and are allowable for the same reasons discussed above with respect to claims 1 and 12 and for the additional features recited therein. It is further respectfully submitted that Doris et al. fail to cure the deficiencies of the combination of Natzle et al. and Newton et al. with respect to claims 1 and 12 and that even assuming it would have been obvious to combine the references, which Applicants do not concede, such a combination would not include all the claim limitations and would not present a *prima facie* case of obviousness.

With respect to claim 29, as neither Natzle et al. nor Newton et al. disclose or suggest increasing the amount of argon corresponds to decreasing the trim amount, or of introducing argon with  $\text{NH}_3$ , the combination, even assuming it would have been obvious, which Applicants do not concede, would not include all the claim limitations and would not present a *prima facie* case of obviousness.

Reconsideration and withdrawal of the rejections over Natzle et al. in view of Newton et al. and Doris et al. are respectfully requested.

In view of the above amendments and remarks, Applicants respectfully submit that all the claims are allowable and that the entire application is in condition for allowance.

Should the Examiner believe that anything further is desirable to place the application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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Date: May 11, 2006

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